

REMARKS

By this Amendment, claim 1 is amended. Accordingly, claims 1-10 are pending in this application, of which claims 3, 4, 6, 7, 9, and 10 are withdrawn. No new matter is presented in this Amendment.

The Patent and Trademark Office (PTO) rejects claims 1, 2, 5, and 8 under 35 U.S.C. §112, first paragraph, asserting that the claims fail to comply with the enablement requirement. Specifically, the PTO asserts that an amplifier having a gain that is "constantly maintained" regardless of a power level of the input signal is a practical impossibility. Applicants replace the term "constantly maintained" with the term "clamped," as suggested by the Examiner. Accordingly, withdrawal of the rejection under 35 U.S.C. §112, first paragraph, is respectfully requested.

The PTO further rejects claims 1, 2, 5, and 8 under 35 U.S.C. 102(b) over U.S. Patent No. 5,356,685 to Kim et al. ("Kim"). This rejection is respectfully traversed. A rejection based on 35 U.S.C. §102 requires every element of the claim to be included in the reference, either directly or inherently. The Applicants respectfully submit that Kim fails to disclose, teach or suggest all the elements of independent claim 1.

Independent claim 1 recites, *inter alia*, a gain-clamped optical amplifier wherein an optical reflection means is installed on an input optical fiber and optical anti-reflection means are installed on an output optical fiber opposite to the input optical fiber. In other words, a fiber grating is mounted on only one side of a gain medium, and an optical isolator, i.e., an optical anti-reflection means, is mounted on the other side of the gain medium. Kim fails to disclose, teach, or suggest this configuration.

Kim only appears to disclose wherein a gain is clamped by mounting two fiber gratings 120 and 150 on an input of an optical fiber and an output of an optical fiber, respectively, thereby forming a Fabry-Perot laser resonator. Nowhere does Kim disclose wherein a single optical fiber grating 120 or 150 is present on one or the other side of amplifier 130. Indeed, it would be impossible to realize the gain control disclosed by Kim were the Applicants' single grating design incorporated in the apparatus of Kim.

Furthermore, the Applicants' gain-clamped optical amplifier comprises operational characteristics that differentiate the Applicants' design from Kim. Specifically, the Applicants respectfully submit that the laser resonator of Kim invariably produces an output ripple due to the relaxation oscillation of the laser. Unlike Kim, the Applicants' device produces no relaxation oscillation output ripple because of the absence of a laser resonator. Indeed, a primary object of the present invention is to overcome the drawback of an output ripple generated by a relaxation oscillator that invariably occurs in a gain-clamped optical amplifier incorporating a laser resonator similar to that of Kim.

Therefore, because Kim not only fails to disclose a single grating design, as recited in claim 1, but also is operational distinct from that of the Applicants, it is respectfully submitted that claim 1 is patentable over Kim.

The rejection of claims 1, 2, and 5 under 35 U.S.C. 102(b) over U.S. Patent No. 6,466,385 to Bousselet et al. ("Bousselet") is likewise traversed.

Independent claim 1 recites, *inter alia*, "optical anti-reflection means installed on an output optical fiber opposite to the input optical fiber having the optical reflection means installed on" and "an optical amplifier located between the optical reflection means and the optical anti-reflection means, for amplifying an input signal and an optical reflection signal." The multiple wavelength source of Bousselet fails to disclose these elements. Indeed, Figs. 1 and 2 of Bousselet clearly disclose wherein an output of the optical fiber amplifier 20 is directly connected to output source 21. Nowhere does Bousselet disclose, teach, or suggest an optical amplifier located between the optical reflection means and the optical anti-reflection means, as recited in claim 1.

Furthermore, unlike the Applicants' optical signal amplifier, Bousselet is directed to a technology that embodies a multiple wavelength light source and fails to disclose an input terminal into which a signal is inputted from the exterior. Bousselet only appears to disclose an output terminal 21 through which multiple wavelength emissions are outputted. Thus, the Bousselet's source cannot provide an amplifying apparatus as recited in claim 1 wherein an optical signal is inputted and amplified.

Furthermore, although Bousselet may disclose a plurality of reflection elements, e.g., optical fiber gratings 14-17, the optical isolator 11 prevents the amplified spontaneous emission

(ASE) reflected by the optical fiber from being incident into a gain medium 4, as recited in claim 1.

Because Bousselet fails to disclose, teach, or suggest: 1) an optical amplifier located between the optical reflection means and the optical anti-reflection means; and 2) wherein the ASE, reflected by the optical fiber grating, should be re-incident into the gain medium, as recited in claim 1, the rejection of claim 1 under 35 U.S.C. §102(b) over Bousselet is improper.

Accordingly, Applicants respectfully submit that independent claim 1 is patentable over Kim and Bousselet. Claims 2, 5, and 8 depend from independent claim 1 and are likewise patentable over Kim and Bousselet at least for their dependence on claim 1, an allowable base claim, as well as for additional features they recite. Withdrawal of the rejections over Kim and Bousselet is respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 2, 5, and 8 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,
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